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## SCIENCE:

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WE PUBLISH IN THIS NUMBER certain suggestions that have been made, by those best able to judge, as to improvements in the taking of the census of the deaf. At the same time we would call attention to certain suggestions by Dr. A. Graham Bell on the census-taking of the deaf which may lead to important results in the study of the heredity of this affection, and to its introduction into certain families through unfortunate marriages. One of the sections in the article to which we refer has reference to the offspring of first-cousin marriages. This is a point of grave importance, and one upon which, up to this time, no special data have been obtained in this country. The committee of the deaf, as it will be seen, recommends the introduction into the census schedules of a question bearing on this point, and it is certainly to be hoped that such a question will be inserted. In examining the ancestry of deaf-mutes, Dr. Bell has had occasion to consult the original population schedules of former censuses, which are preserved in the Department of the Interior, and he has found little difficulty in tracing the families backward from census to census in the male line of ascent. If the name of the father had been given in former censuses, it might now be possible for genealogical experts to trace from these records the American ancestry of every person now living in the United States in every branch, for the name of the father would give the maiden name of females. Dr. Bell therefore suggests that in the census of 1890 the father's

name should be noted in that part of the schedule that relates to the nativity of the parents, so that the people of the United States may leave to their descendants genealogical records from which their full ancestry may at any time be ascertained. This suggestion is full of interest to the genealogists of the country, and, if carried into effect, would undoubtedly prove of great value to them. The committee of the New England Historical and Genealogical Society, to whom this matter was referred, has strongly indorsed it, and it is hoped that a question on this point, as shown in the proposed schedule, will be inserted.

## THE ENUMERATION OF THE DEAF.

A MEETING of the executive committee of the conference of American instructors of the deaf was held in Washington, May 9 of this year, to consider the best method of enumerating the deaf of the next census, and confer with the superintendent of the census, Hon. Robert D. Porter, on the subject. Dr. Alexander Graham Bell and Mr. Frederick Howard Wines were invited to act with the committee. All the members of the committee, including Dr. Bell, were present; but Mr. Wines was unable to attend. After a discussion of several hours and a pleasant interview with Mr. Porter and Dr. J. S. Billings, who has charge of the mortality and vital statistics of the "Eleventh Census," Mr. Porter acceded to the request of the committee, that in the next census the deaf should be separated from the pauper and criminal classes, and promised to give careful consideration to any suggestions the committee might make. In accordance with this, the committee, — consisting of Edward M. Gallaudet, president of the National College for Deaf-Mutes; Isaac Lewis Peet, principal of the New York Institution for the Deaf and Dumb; Philip G. Gillett, superintendent of the Illinois Institution for the Deaf and Dumb; J. L. Noyes, superintendent of the Minnesota School for the Deaf; Caroline A. Yale, principal of the Clarke Institution for the Deaf at Northampton, Mass.; Alexander Graham Bell; and Edward Allen Fay, editor of the *American Annals of the Deaf*, — on June 21, addressed a letter to Mr. Porter, in which they made the following statements and suggestions: —

"At the sixth conference of principals and superintendents of American schools for the deaf, held at Jackson, Miss., April 14-17, 1888, — a body representing all the schools for the deaf in the United States, numbering last year 8,372 pupils, — we were appointed a committee to endeavor to effect a reform in the method of enumerating the deaf in the United States census, in the hope of securing fuller and more accurate statistics in 1890 than have heretofore been obtained. In accordance with your request at our interview on the 9th of May last, that we should make such suggestions as might seem desirable in this direction, we respectfully submit the following recommendations: —

"1. Section 17 of the act of Congress, entitled 'An Act to provide for taking the tenth and subsequent censuses' [approved March 3, 1879], provides that 'Schedule No. 1 (here reproduced) shall contain inquiries . . . as to the physical and mental health of each person enumerated, whether active or disabled, maimed, crippled, bedridden, deaf, dumb, blind, insane, or idiotic, and whether employed or unemployed, and, if unemployed, during what portion of the year.' In accordance with this provision, inquiries were made in the 'Tenth Census' concerning the disabled; and full returns were sought of all the classes named in the act, excepting the deaf and the dumb. Only those dumb were enumerated who were also deaf, and only those deaf who had lost hearing before the age of sixteen years. We urge that in the 'Eleventh Census' all the classes named in the act be fully enumerated; and we specially urge that the returns of the deaf be not limited to that sub-class of the deaf formerly denominated the 'deaf and dumb.' If the requirements of the law are fully complied with, the returns will be much more useful to us, as teachers of the deaf, than if the plan pursued in former censuses of inquiring only for the 'deaf and dumb' is continued. Pupils are admitted to the schools we represent, not on account of their dumbness, but on account of their deafness. Persons who are merely dumb are not received: persons who are merely deaf are received. Our schools are open to

all children of school age who are debarred by deafness from attending ordinary schools for hearing persons. We wish the aid of the census in obtaining the names and post-office addresses of such children, in order to bring them into the special schools suited to their condition.

"2. The age or period of life at which deafness occurred is a

which the deafness occurred. They should be instructed that this point is of such vital importance to the correct classification of the deaf that an answer must be obtained in every case, or a reason assigned for non-reply. This reason may in some cases itself reveal the point desired.

"3. We recommend that in Schedule No. 1 the physical and

FORM OF QUESTIONS USED IN SCHEDULE NO. 1 OF THE TENTH CENSUS [1880.]

HEALTH.		EDUCATION.		NATIVITY.			
15	Is the person [on the day of the enumeration] blind, deaf, or otherwise disabled so as to be unable to attend to ordinary business or duties? If so, what is the sickness or disability?	16	Blind, /.	24	Place of birth of this person, naming State or Territory of United States, or the country if of foreign birth.	26	Place of birth of the mother of this person, naming the State or Territory of the United States, or the country if of foreign birth.
17	Deaf and Dumb, /.	21	Attended school within the census year, /.	25	Place of birth of the father of this person, naming the State or Territory of United States, or the country if of foreign birth.		
18	Idiotic, /.	22	Cannot read, /.				
19	Insane, /.	23	Cannot write, /.				
20	Maimed, Crippled, Bedridden, or otherwise disabled, /.						

Fig. 1.

SUGGESTED FORM OF QUESTIONS FOR SCHEDULE NO. 1 OF THE ELEVENTH CENSUS [1890].

PHYSICAL AND MENTAL CONDITION.		EDUCATION.		NATIVITY AND PARENTAGE.			
15	Is the person [on the day of the enumeration] blind, deaf, or otherwise disabled so as to be unable to attend to ordinary business or duties? If so, what is the sickness or disability?	21	Attended school within the census year? Yes — No X.	24	Place of birth of this person, naming State or Territory of United States, or the country if of foreign birth.	26	Place of birth of the mother of this person, naming State or Territory of the United States, or the country if of foreign birth.
16	Sight. { Good — Not good / Cannot see well enough to read X.	22	Can this person read? Yes — No X.	25	Place of birth of the father of this person, naming State or Territory of the United States, or the country if of foreign birth.		
17	Hearing. { Good — Not good / Cannot hear loud conversation X.	23	Can this person write? Yes — No X.				
18	Speech. { Good — Not good / Cannot speak so as to be understood X.						
19	Mind. { Mental condition good — Not good / Mentally disabled X.						
20	Body. { Physical condition good — Not good / Physically disabled X.						
		27	Were the parents of this person first cousins? Yes, — No, X.	28	Name of the FATHER of this person.		

Fig. 2.

FORM OF QUESTIONS ON DEFECTIVE CLASSES FOR TENTH CENSUS AND PROPOSED FORM FOR ELEVENTH CENSUS COMPARED.

more reliable element in determining the sub-class of the deaf to which a person belongs than the presence or absence of the power of speech, or the exact amount of muteness involved. We therefore recommend, that, in taking a census of the deaf, the enumerators be specially required to ascertain the age or period of life at

mental condition of each person be noted. The form of questions as to physical and mental condition, as shown in Fig. 2, is suggested for incorporation in that schedule. To ascertain the condition of the hearing, the enumerator should be instructed to ask first whether the person can hear well. If the answer is 'Yes,' the

enumerator should indicate the reply by a horizontal mark (—) placed in the 'Hearing' column; if the hearing is not good, by a mark sloping from right to left (/); and if the question is not answered, the column should be left blank. If the hearing is reported as 'not good' (/), the enumerator should then ascertain the extent of the disability. If the person is too deaf to be taught in ordinary schools for hearing persons, or cannot hear conversation in a loud tone of voice, the enumerator should convert the sloping mark (/) into a cross (×), and proceed to put the interrogatories contained in the supplementary schedule or card relating to the deaf (see Paragraph 4, below). If, on the other hand, the person is merely 'hard of hearing,' or if there is doubt whether the deafness is sufficient to constitute the disability above specified, the cross should not be made, and the person should not be entered on the supplementary schedule or card relating to the deaf.

"The condition of the speech should be ascertained and recorded in a similar manner. If the person speaks well, the enumerator should make a horizontal mark (—) in the 'Speech' column; if not, a sloping mark (/); and if the person cannot speak so as to be understood, or cannot speak at all, the sloping mark should be converted into a cross (×).

"The deaf and the dumb would then be indicated as follows, in Schedule No. 1:—

	CONDITION OF THE —				
	Sight.	Hearing.	Speech.	Mind.	Body.
The deaf.....	.....	×	.....	.....	.....
The dumb (because of deafness).....	.....	×	×	.....	.....
The dumb (because of idiocy).....	.....	.....	×	×	.....
The dumb (because of defective vocal organs).....	.....	.....	×	.....	.....

"The fact that there are three classes of dumb persons shows the liability to error when the enumerator is instructed, as heretofore, to inquire for the 'deaf and dumb.' Out of 29,776 idiots, whose powers of speech were ascertained from physicians in the last census, 7,396, or about one-fourth of the whole number, could not articulate at all, or had no use of spoken language; 14,707, or about one-half, could articulate but imperfectly, or their use of language was very defective; the number who spoke intelligibly was only 7,673. It thus appears that a large proportion of the idiotic are no less 'dumb' than deaf-mutes; and it is almost inevitable, that, when dumbness is made prominent (as in the term 'deaf and dumb'), the one class should be confused with the other, resulting in the return of intelligent deaf-mutes as 'idiotic,' and of idiotic hearing persons as 'deaf and dumb.' In the last census, moreover, 2,339 persons were returned as both 'deaf-mute and idiotic.' It is extremely probable that among these were some deaf-mutes of good mind, and some idiots who could hear. If a census of the deaf is taken, this source of error will be removed. Other advantages of the form of questions above proposed over the former plan of asking for the 'blind, deaf and dumb, idiotic, insane, maimed, crippled, bedridden, or otherwise disabled,' are explained in Dr. Alexander Graham Bell's communication to Senator Hale (Paragraphs 20-39), which was published in *Science* of Jan. 18.

"4. Mr. F. H. Wines of Springfield, Ill., special agent of the "Tenth Census," in charge of the statistics relating to the deaf and other special classes of the population, who was invited to act with this committee, but was unable to be present at our meeting, suggested to us by letter, that, instead of supplementary schedules, the enumerators should be provided with special cards, on which the questions to be asked in the case of each deaf person should be printed, with spaces for the answers; and that the enumerators be required to fill out these cards in duplicate, — one copy for use, and the other for preservation. We approve of the suggestion of special cards, and recommend the following form, in addition to such references as may be necessary for identification with Schedule No. 1.

#### [Face of Card.]

[This space may be used for the necessary references for identification with Schedule No. 1.]

#### THE DEAF.

##### *Instructions to the Enumerator.*

*Note A.* — The questions on this card should be asked in the case of every person who is too deaf to be taught in ordinary schools for hearing persons, or who cannot hear conversation in a loud tone of voice.

*Note B.* — Question No. 5 is very important, and every possible effort must be made to obtain a correct answer.

If the person was born deaf, write B; if not, state the age at which the hearing was lost.

If it is difficult to find out the exact age at which the person became deaf, ask *at what period of life* deafness occurred; as, for instance, whether it was in infancy (under 4 years of age), in childhood (under 10), in youth (under 20), in adult life (from 20 to 50), or in old age.

If you cannot get an answer to Question No. 5, state here the reason why you cannot.

*Note C.* — In answering Question No. 8, use the same check-marks as in Schedule No. 1.

1. Name of the deaf person?
2. Residence when at home: Town? County? State? Post-office address?
3. Name of this person's father?

#### [Reverse of Card.]

4. Race or color of this person? Sex? Age?
5. At what age or period of life did this person become deaf? [See *Note B.*]
6. Cause of deafness?
7. Did the deafness result from military service?
8. Physical and mental condition [see *Note C.*]. Sight? Hearing? Speech? Mind? Body?
9. Can this person hear sufficiently to perceive a warning shout in case of danger?
10. Is this person educated? Where taught?
11. What is this person's occupation?
12. Monthly earnings? \$ Value of property? \$
13. Is this person a pauper?
14. Were the parents of this person first-cousins?
15. Has this person had any deaf brothers or sisters?
16. Is this person single (s); married (m); widowed (wid); or divorced (d)? If married, name of the wife (or husband)?
17. Name of the wife's (or husband's) father?
18. Has the wife (or husband) had any deaf brothers or sisters?
19. How many children have been born of this marriage? How many of the children were deaf? How many died young?
20. Is the wife (or husband) deaf? If so, became deaf at what age or period of life? [See *Note B.*]

"5. In addition to the statistics gathered by the enumerators, much valuable information relating to the deaf can be obtained by means of inquiries addressed to principals of schools for the deaf, teachers of common schools, physicians, and intelligent deaf persons. We recommend that special cards with suitable questions be addressed to each of these classes of persons.

"6. We recommend that some one thoroughly qualified by familiarity with the deaf be placed in charge of the entire work of the census relating to this class.

"7. We recommend that in the publication of the results of the census the deaf be separated from the pauper and criminal classes.

"8. In the last census, 4,597 persons were returned as doubly or trebly afflicted with deaf-mutism, idiocy, insanity, and blindness. Those who were returned as 'deaf and dumb and idiotic' were reported among 'the deaf and dumb' and again among 'the idiotic,' etc.; each of the doubly afflicted persons being thus counted twice, and each of the trebly afflicted persons thrice. In this way the 4,597 doubly and trebly afflicted persons counted in the summing-up of the insane, idiots, blind, and deaf-mutes ('Tenth Census,' vol. xxi. p. vii.), as 9,441 persons, more than double their actual number, making the total of these classes appear greater by 4,844 individuals than it really was. In order to insure accuracy with

respect to these classes, we recommend that the returns of persons doubly and trebly afflicted be not classed with the deaf, the idiotic, etc., respectively, but be grouped in classes by themselves, and placed in charge of some specially qualified person for the careful examination and verification of the returns, and for an investigation into the causes of these terrible afflictions.

"9. An impression is prevalent that deafness, blindness, idiocy, and insanity are often due to consanguinity in the parents; and statistics have been collected which show that a considerable percentage of the deaf, blind, idiotic, and insane are the children of first-cousins. These statistics, however, can be of little value in determining the questions involved until we know what percentage of the general population are the offspring of such unions. We therefore recommend that in Schedule No. 1 the question be asked, 'Were the parents of this person first-cousins?'

"We trust that these suggestions will commend themselves to your judgment, and believe that, if adopted, they will result in a more accurate and satisfactory census of the class in whose welfare we are especially interested than has yet been obtained."

#### HEALTH MATTERS.

##### Baking Bacilli.

AT a meeting of the New York Academy of Medicine, June 20, Dr. A. Jacobi read some notes on the baking of bacilli, being a denunciation of Weigert's advertising scheme, and a review of his own experience with the inhalation of hot air in the treatment of phthisis. Weigert, supposed to be an American physician, now of Germany, claimed to have discovered a method of curing phthisis by the inhalation of hot air, and he had made free use of Dr. Jacobi's name in advertising his apparatus for carrying out this treatment. The treatment was not original with Weigert; nor had Dr. Jacobi, as had been asserted, bought, indorsed, or recommended the apparatus in question. Moreover, as appeared further along, he had little confidence in the method. To Halter belonged the honor of suggesting the treatment of phthisis by the inhalation of hot air with the view of killing the bacilli in the lungs. The idea arose from observing the immunity from phthisis of workmen in a lime-kiln where they were exposed to a high degree of heat ( $122^{\circ}$  to  $158^{\circ}$  F.),—so high that it would destroy the tubercle bacilli, provided it continued at that degree until it had reached the lungs. The air inhaled by workmen in a lime-kiln was dry and rarefied. A moist atmosphere of a like temperature would be more destructive of the bacilli, but was less endurable by the phthisical patient. Dr. Jacobi said, that, having been requested to admit Weigert's apparatus into his wards at Bellevue Hospital, he did experiment with it some time ago, and for a while the results made a favorable impression on the physicians in attendance, for the patients, or a part of them, seemed to improve under the treatment. More careful observation, however, showed that the improvement was doubtless due to rest in the hospital, in an atmosphere much purer than that in which the patients had lived in their tenement homes. The instrument itself was not as good as that which one of ordinary ingenuity could improvise. The atmosphere on its way to the lungs from the flame was found to have fallen from above  $300^{\circ}$  F. to about the temperature of the body when it had reached the mouth. Of course, if it were above the temperature of the blood, it would become further cooled on its passage toward the lungs. Some of the hot air might get into the alveoli, but very little. In order to obtain benefit from such treatment, it would be necessary not only that the air inhaled be of a high temperature, but that the patient be in a room in which the thermometer registered at least  $105.5^{\circ}$  F.: in other words, it would be necessary to produce a sort of artificial fever, and it was evident that such treatment must prove injurious to any other than patients in the very first stage of phthisis.

##### Professor Huxley and M. Pasteur on Hydrophobia.

On Monday, July 1, a meeting called by the lord mayor of London to hear statements from men of science with regard to the recent increase of rabies in England, and the efficiency of the treatment discovered by M. Pasteur for the prevention of hydrophobia, was held at the Mansion House. Several letters were read from those who were unable to attend. Among these letters was one from

Professor Huxley, in which he says, "I greatly regret my inability to be present at the meeting which is to be held, under your lordship's auspices, in reference to M. Pasteur and his institute. The unremitting labors of that eminent Frenchman during the last half-century have yielded rich harvests of new truths, and are models of exact and refined research. As such they deserve, and have received, all the honors which those who are the best judges of their purely scientific merits are able to bestow. But it so happens that these subtle and patient searchings-out of the ways of the infinitely little—of that swarming life where the creature that measures one-thousandth part of an inch is a giant—have also yielded results of supreme practical importance. The path of M. Pasteur's investigations is strewn with gifts of vast monetary value to the silk-trader, the brewer, and the wine merchant; and, this being so, it might well be a proper and a graceful act, on the part of the representatives of trade and commerce in its greatest centre, to make some public recognition of M. Pasteur's services, even if there were nothing further to be said about them. But there is much more to be said. M. Pasteur's direct and indirect contributions to our knowledge of the causes of diseased states, and of the means of preventing their occurrence, are not measurable by money values, but by those of healthy life and diminished suffering to men. Medicine, surgery, and hygiene have all been powerfully affected by M. Pasteur's work, which has culminated in his method of treating hydrophobia. I cannot conceive that any competently instructed person can consider M. Pasteur's labors in this direction without arriving at the conclusion, that, if any man has earned the praise and honor of his fellows, he has. I find it no less difficult to imagine that our wealthy country should be other than ashamed to continue to allow its citizens to profit by the treatment freely given at the institute without contributing to its support. Opposition to the proposals which your lordship sanctions would be equally inconceivable if it arose out of nothing but the facts of the case thus presented. But the opposition which, as I see from the English papers, is threatened, has really, for the most part, nothing on earth to do either with M. Pasteur's merits or with the efficacy of his method of treating hydrophobia. It proceeds partly from the fanatics of *laissez faire*, who think it better to rot and die than to be kept whole and lively by State interference, partly from the blind opponents of properly conducted physiological experimentation, who prefer that men should suffer rather than rabbits or dogs, and partly from those who for other but not less powerful motives hate every thing which contributes to prove the value of strictly scientific methods of inquiry in all those questions which affect the welfare of society. I sincerely trust that the good sense of the meeting over which your lordship will preside will preserve it from being influenced by these unworthy antagonisms, and that the just and benevolent enterprise you have undertaken may have a happy issue."

M. Pasteur, in a letter dated Paris, the 27th ult., and read by Sir H. Roscoe, writes, "I am obliged by your sending me a copy of the letter of invitation issued by the lord mayor for the meeting on July 1. Its perusal has given me great pleasure. The questions relating to the prophylactic treatment for hydrophobia in persons who have been bitten, and the steps which ought to be taken to stamp out the disease, are discussed in a manner both exact and judicious. Seeing that hydrophobia has existed in England for a long time, and that medical science has failed to ward off the occurrence even of the premonitory symptoms, it is clear that the prophylactic method of treating this malady which I have discovered ought to be adopted in the case of every person bitten by a rabid animal. The treatment required by this method is painless during the whole of its course, and not disagreeable. In the early days of the application of this method, contradictions such as invariably take place with every new discovery were found to occur, and especially for the reason that it is not every bite by a rabid animal which gives rise to a fatal outburst of hydrophobia: hence prejudiced people may pretend that all the successful cases of treatment were cases in which the natural contagion of the disease had not taken effect. This specious reasoning has gradually lost its force with the continually increasing number of persons treated. To-day, and speaking solely for the one anti-rabic laboratory of Paris, this total number exceeds 7,000; or exactly, up to the 31st of May, 1889, 6,950. Of